



**STATE OF CALIFORNIA
State Energy Resources
Conservation and Development Commission**

In the Matter of:)	Docket No. 82-AFC-2C
)	Order No. 04-0407-03
KERN RIVER COGENERATION PROJECT)	
KERN RIVER COGENERATION COMPANY)	ORDER APPROVING a Petition
)	to Allow for Either Cogen or Simple-
)	Cycle Operation

The Kern River Cogeneration Company, the owner and operator of the Kern River Cogeneration Project, filed a petition on December 22, 2003, with the California Energy Commission to allow for two of the four turbines to operate in either cogeneration or simple-cycle mode in response to (1) a decline in steam demand from the adjacent oilfield, and (2) the need for flexibility to respond to the current electricity market.

The Energy Commission approves the Kern River Cogeneration Company petition and the revised air quality conditions of certification in accordance with Title 20, Section 1769 (a) (3) of the California Code of Regulations.

ENERGY COMMISSION FINDINGS

Based on staff's analysis, the Commission concludes that the proposed changes will not result in any significant impact to public health and safety, or the environment. The Energy Commission finds that:

- There will be no new or additional significant environmental impacts associated with the proposed changes.
- The project will remain in compliance with all applicable laws, ordinances, regulations and standards, subject to the provisions of the Public Resources Code section 25525.
- This amendment will be beneficial to the project owner by allowing for operational flexibility.
- There has been a substantial change since the Energy Commission certification based on the project owner's re-evaluation of market information that was not available during the siting process.

CONCLUSION AND ORDER

The California Energy Commission hereby adopts the following changes to the Kern River Cogeneration Project Decision. New text is underlined. Deleted text is shown in ~~strikeout~~.

AQ-2 Kern River Cogeneration Company shall design the Kern River Project using the following design conditions and specific equipment:

Equipment Description:

- A. Four natural gas ~~or light oil~~ fired General Electric, Model G7111E, combustion turbine generators (CTG's) each rated at 8.25×10^8 Btu/hr (LHV) maximum heat input (APCD No.'s S-88-1-12 through -4-12),
- B. Four unfired heat recovery steam generators (HRSG's), each rated at 450,000 lbm/hr steam production one for each gas turbine engine assembly,
- C. Four CTG Dry-Low NO_x combustor ~~water or steam injection~~ systems for NO_x control; ~~one for each CTG~~,
- D. Continuous emission monitoring system for NO_x, CO and CO₂ serving each CTG flue gas stream,
- ~~E. Two 600 gpm demineralizes to provide steam or water, respectively to injection systems,~~
- F. 2000 hp diesel I.C. engine driving "black-start" electrical generator (APCD No. S-88-5-2),
- G. Facility will include one 250 hp diesel I.C. engine driving 1500 gpm fire water pump (APCD No. S-88-8-1).
- H. Turbine maximum heat input rate shall not exceed 1,020 MMBtu/hr when fired on natural gas without prior District approval.

General Design Requirements:

- A. When operating in cogeneration mode, the ~~E~~exhaust gas ducting from CTGs through HRSGs to the atmosphere shall be gas-tight.
- B. When operating in simple cycle mode, the ~~B~~ypass stack valve preceding each HRSG shall be ~~designed to be~~ gas tight.
- C. Each CTG shall have a fuel consumption monitor/recorder.

Design Requirements for CTG - DLN Retrofit:

- A. The combustion turbine generators (CTGs) shall be retro fitted with dry low NO_x (DLN) combustors, capable of achieving 16.4 ppm or better at 15% O₂ based on a three hour rolling according to the schedule in Condition AQ-27.
- B. CTGs using multiple combustors shall be designed to be capable of achieving proposed emission levels.

Verification: Kern River Cogeneration Company shall maintain and make available for inspection the "Approved for Construction Drawings" to the SJVUAPCD, CARB, and CEC upon reasonable notice (1 hour for weekdays, 8 hours for weekends and holidays). Kern River Cogeneration Company shall make the site available for inspection by the SJVUAPCD, CARB, and CEC during both construction and operation upon reasonable notice (1 hour for weekdays, 8 hours for weekends and holidays).

~~AQ-13 The Kern River Project facility shall operate as a cogeneration facility pursuant to Public Resources Code Section 25134 for thermally enhanced oil recovery operations.~~

~~**Verification:** Kern River Cogeneration Company shall maintain records on steam production as a portion of the operation log required in Condition AQ-11. The record shall include, but is not limited to, hours of operation of the turbines and HRSGs, lb/hr of steam produced, and temperature and pressure of steam produced.~~

- AQ-17 a. Startup or planned shutdown of a CTG shall not exceed a time period of two (2) continuous hours.
- b. For all CTGs the following ~~hourly~~ emission limits shall apply during times of startup or ~~planned~~ shutdown and shall be averaged over the time period specified below ~~two hour period allowed for startup or planned shutdown:~~

NO ₂	140 lbm/hr (<u>2-hr average</u>) not to exceed 3360 lb/day
CO	<u>200 lbm/hr (1-hr average)</u> , 140 lbm/hr (<u>2-hr average</u>) not to exceed 3360 lb/day

~~AQ-18 Pollutant emissions from each combustion turbine prior to being retrofitted with the Dry Low NO_x combustor shall not exceed the following limits, except during times of startup or shutdown as defined in Condition AQ-17:~~

~~Gas Fired Case:~~

Particulates	-5.0 lbm/hr as PM10
Sulfur Compounds	-0.5 lbm/hr as SO₂
	-0.6 lbm/hr as SO₄
Oxides of Nitrogen	-140.0 lbm/hr as NO₂

Hydrocarbons	-12.0 lbm/hr (Non-meth)
Carbon Monoxide	-21.0 lbm/hr

Pollutant emissions from each ~~Dry Low NO_x-equipped~~ combustion turbine shall not exceed the following limits except during times of startup or shutdown as defined in Condition AQ-17:

Gas Fired Case:

Particulates	- 5.0 lbm/hr as PM10 - 120.0 lbm/day as PM10
Sulfur Compounds	- 0.9 to 5 lbm/hr as SO _x (as SO ₂) <u>-21.6 lb/day as SO_x (as SO₂)</u> -0.6 lbm/hr as SO₄
Oxides of Nitrogen	- 1629.6 lbm/day as NO ₂ - 67.9 lbm/hr as NO ₂ , 3 hour rolling average - 16.4 ppmv at 15% O ₂ , 3 hour rolling average Not to exceed - <u>79.7lbm/hr, 1 hour average</u>
Hydrocarbons	-12.0 lbm/hr (Non-methane) <u>- 288.0 lbm/day</u>
Carbon Monoxide	-1056 lbm/day and - 25 ppmv at 15% O ₂ <u>- 44.0 lbm/hr 3-hour rolling average</u>

Protocol: For nitrogen dioxide, the Kern River Cogeneration Company (KRCC) shall identify the following for each day of operation, except during times of start up or shutdown, as defined in Condition AQ-17:

- (1) the daily maximum hourly mass emission rate (lbs/hr),
- (2) the daily maximum rolling 3-hour average mass emission rate (lbs/hr) and
- (3) the total daily mass emissions (lbs/day).

For carbon monoxide, KRCC shall identify the total daily mass emissions (lbs/day) for each day of operation, except during times of start up or shutdown, as defined in Condition AQ-17.

For particulate matter (PM10), sulfur compounds (SO₂ and SO₄) and non-methane hydrocarbons, KRCC shall determine through the initial source test, the fuel-based emission factors (lbs/mmBtu) for each pollutant. Using these factors, KRCC shall determine the maximum allowable fuel input rate (mmBtu/hr) that would comply with the above stated emission limits (lbs/hr) (i.e., emission limit / emission factor = fuel input rate). KRCC shall then compare these fuel input rates (as determined above) with the actual daily maximum fuel input rate (mmBtu/hr) for each day of operation, except during times of start up or shutdown, as defined in Condition AQ-17.

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KRCC shall submit all excess emission reports and break down reports to demonstrate compliance with all concentration limits.

Verification: KRCC shall submit quarterly emission reports with all the information identified in the above protocol to the CEC compliance project manager.

AQ-26 Prior to installation, Kern River Cogeneration Company shall provide to SJVUAPCD details of design as they relate to air contaminant generation, emission, or control potential of the following: CTG DLN combustion systems; ~~and NO_x control water injection system.~~

Verification: Kern River Cogeneration Company shall provide the above information to the SJVUAPCD and CEC 60 days before installation of the equipment identified in Condition AQ-26.

IT IS SO ORDERED.

STATE OF CALIFORNIA
ENERGY RESOURCES
CONSERVATION AND
DEVELOPMENT COMMISSION

DATE

WILLIAM J. KEESE, Chairman